

§Appl. No. 10/764,584  
Amdt. dated April 19, 2007  
Reply to Office Action of, January 19, 2007

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Currently Amended): ~~Process~~ A process for heat treatment of a hydrocarbon feedstock in a furnace that comprises at least one parallelepipedic radiation chamber with two opposite radiant walls supporting catalytic burners comprising parallelepipedic panels each comprising one face along one radiant wall and an opposite face formed by a porous panel parallel to said one radiant wall and emitting heat toward said bundle, the process comprising: providing ~~comprising~~ at least one essentially vertical exchange tube bundle inside of which circulates the hydrocarbon feedstock to be treated, equipping whereby said radiant walls ~~are equipped~~ with catalytic radiant burners with porous panels that are typically used in the form of essentially horizontal or optionally vertical bands; that are distributed over several levels in the vertical direction, or respectively in the horizontal direction, generating whereby these with the catalytic radiant burners ~~generate~~ a mean temperature  $T_m$  of the radiant walls of between 900°C and 1300°C, ~~characterized in that~~ having a ratio  $R$  of the cumulative surface of the porous panels to the cumulative surface of the radiant walls is of at least equal to 0.3 and ~~in that this~~ selecting the ratio  $R$  is high enough and mean temperature  $T_m$  is low enough ~~so~~ that the NO<sub>x</sub> level in the smoke at the outlet of the furnace is at most ~~equal to~~ 100 mg/NM<sup>3</sup>.

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Claim 2 (Currently Amended): ~~Process~~ A process according to claim 1, wherein ratio R of the cumulative surface area of the porous panels to the cumulative surface area of the radiant walls is at least ~~equal to~~ 0.3 and wherein ~~this~~ ratio R is high enough, and mean temperature  $T_m$  is low enough, for the NO<sub>x</sub> level in the smoke at the furnace outlet to be at most ~~equal to~~ 10 mg/NM<sup>3</sup>.

Claim 3 (Currently Amended): A process according to claim 1, wherein  $T_m$  is ~~between~~ in a range of 950°C and 1250°C, and R is ~~between~~ in a range of 0.5 and 1.

Claim 4 (Currently Amended): A process according to claim 1, wherein each radiant burner comprises a parallelepipedic box that has one of its faces placed against one of the lateral walls of the furnace, whereby the face opposite to ~~the preceding~~ said one faces comprises a porous panel ~~whose~~ having an inside face ~~communicates~~ communicating with a fuel supply chamber, ~~and~~ the outside radiative face transferring ~~transfers its heat therein~~ to the tube bundle essentially by radiation.

Claim 5 (Currently Amended): A process according to claim 4, wherein the porous panel exhibits a pore size in a range of ~~between~~ 0.1 and 0.95.

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Claim 6 (Previously Presented): A process according to claim 4, wherein the combustion of the air-fuel mixture that is used in the supply of catalytic radiant burners takes place in a catalytic zone that is located inside the porous panel, according to a so-called “radiant” combustion mode.

Claim 7 (Previously Presented): A process according to claim 4, wherein the combustion of the air-fuel mixture that is used in the supply of catalytic radiant burners takes place over the outside surface of the porous panel according to a so-called “blue flame” method.

Claim 8 (Currently Amended): A process according to claim 1, wherein at each catalytic radiant burner, the “radiant” combustion mode is used in a heat flow range ~~that goes from~~ of 10 to 600 kW/square meter.

Claim 9 (Previously Presented): A process according to claim 1, comprising steam-cracking hydrocarbons for the production of ethylene and propylene.

Claim 10 (Currently Amended): A process according to claim 1, comprising ~~stream~~ steam reforming of hydrocarbons that have essentially less than 12 carbon atoms for the production of synthesis gas.

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Claim 11 (Currently Amended): A process according to claim 4, wherein the porous panel exhibits a pore size in a range of ~~between~~ 0.3 and 0.8.

Claim 12 (Currently Amended): A process according to claim 1, wherein at each catalytic radiant burner, the “radiant” combustion mode is used in a heat flow range ~~that goes from~~ of 100 to 300 kW/square meter.

Claim 13 (Previously Presented): A process according to claim 2, comprising steam-cracking hydrocarbons for the production of ethylene and propylene.

Claim 14 (Previously Presented): A process according to claim 3, comprising steam-cracking hydrocarbons for the production of ethylene and propylene.

Claim 15 (Previously Presented): A process according to claim 4, comprising steam-cracking hydrocarbons for the production of ethylene and propylene.

Claim 16 (Previously Presented): A process according to claim 5, comprising steam-cracking hydrocarbons for the production of ethylene and propylene.

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Claim 17 (Previously Presented): A process according to claim 6, comprising steam-cracking hydrocarbons for the production of ethylene and propylene.

Claim 18 (Previously Presented) A process according to claim 7, comprising steam-cracking hydrocarbons for the production of ethylene and propylene.

Claim 19 (Previously Presented): A process according to claim 8, comprising steam-cracking hydrocarbons for the production of ethylene and propylene.

Claim 20 (New) A process according to claim 1 wherein R is in a range of 0.7 to 0.95.